US009764798B1

(12) **United States Patent**
Voelker et al.

(10) **Patent No.: US 9,764,798 B1**
(45) **Date of Patent: Sep. 19, 2017**

(54) **FOLDABLE ANCHOR**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/394,820**

(22) Filed: **Dec. 30, 2016**

(51) **Int. Cl.**

B63B 21/40	(2006.01)
B63B 21/24	(2006.01)
B63B 21/36	(2006.01)
B63B 21/42	(2006.01)
B63B 21/32	(2006.01)
B63B 21/26	(2006.01)

(52) **U.S. Cl.**
CPC ***B63B 21/243*** (2013.01); *B63B 21/32* (2013.01); *B63B 21/36* (2013.01); *B63B 21/42* (2013.01); *B63B 2021/262* (2013.01)

(58) **Field of Classification Search**
CPC B63B 21/24; B63B 21/26; B63B 21/30; B63B 21/32; B63B 21/34; B63B 21/36; B63B 21/38; B63B 21/40; B63B 21/42; B63B 21/44; E02D 5/80; E02D 5/803
See application file for complete search history.

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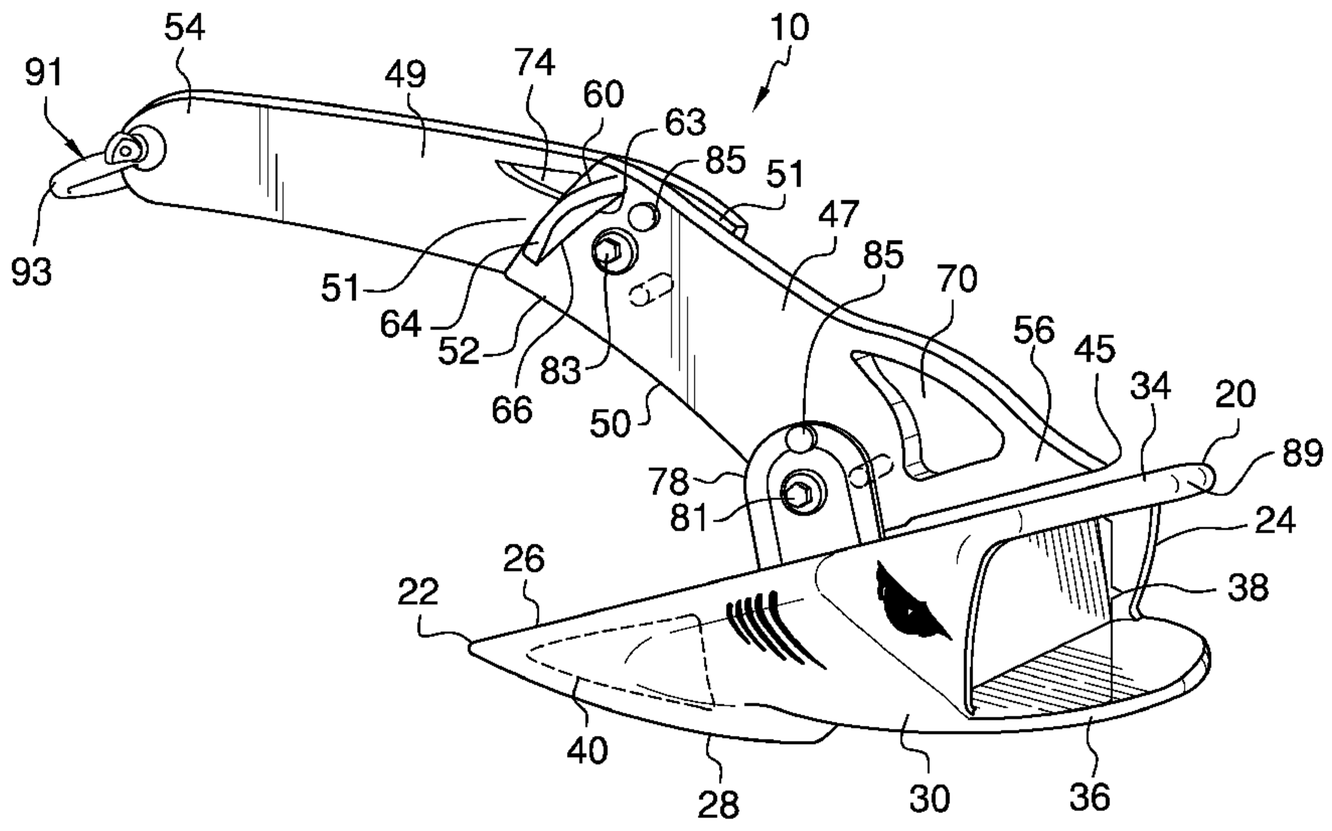
(57) **ABSTRACT**

A foldable anchor storable on watercraft with limited storage and deck space and which secures watercraft in place in sandy and soft bottom boating areas and is releasable from underwater objects. The foldable anchor includes a forward anchor body with an internal weighted ballast on an anchor body and a two-part shank pivotably attached to a top end of the anchor body which allows the shank to pivot from an elevated position to a lowered position relative the anchor body. The shank has a rear portion and a front portion pivotably disposed thereon and foldable against the rear portion. Stabilizer wings between the front and rear portions assist the anchor body to roll into a correct upright position. Locking pins secure each of the rear and front portions together and the rear portion and anchor body together at selected angles. D-rings and breakable zip ties secure the shank to an anchor rope.

6 Claims, 5 Drawing Sheets



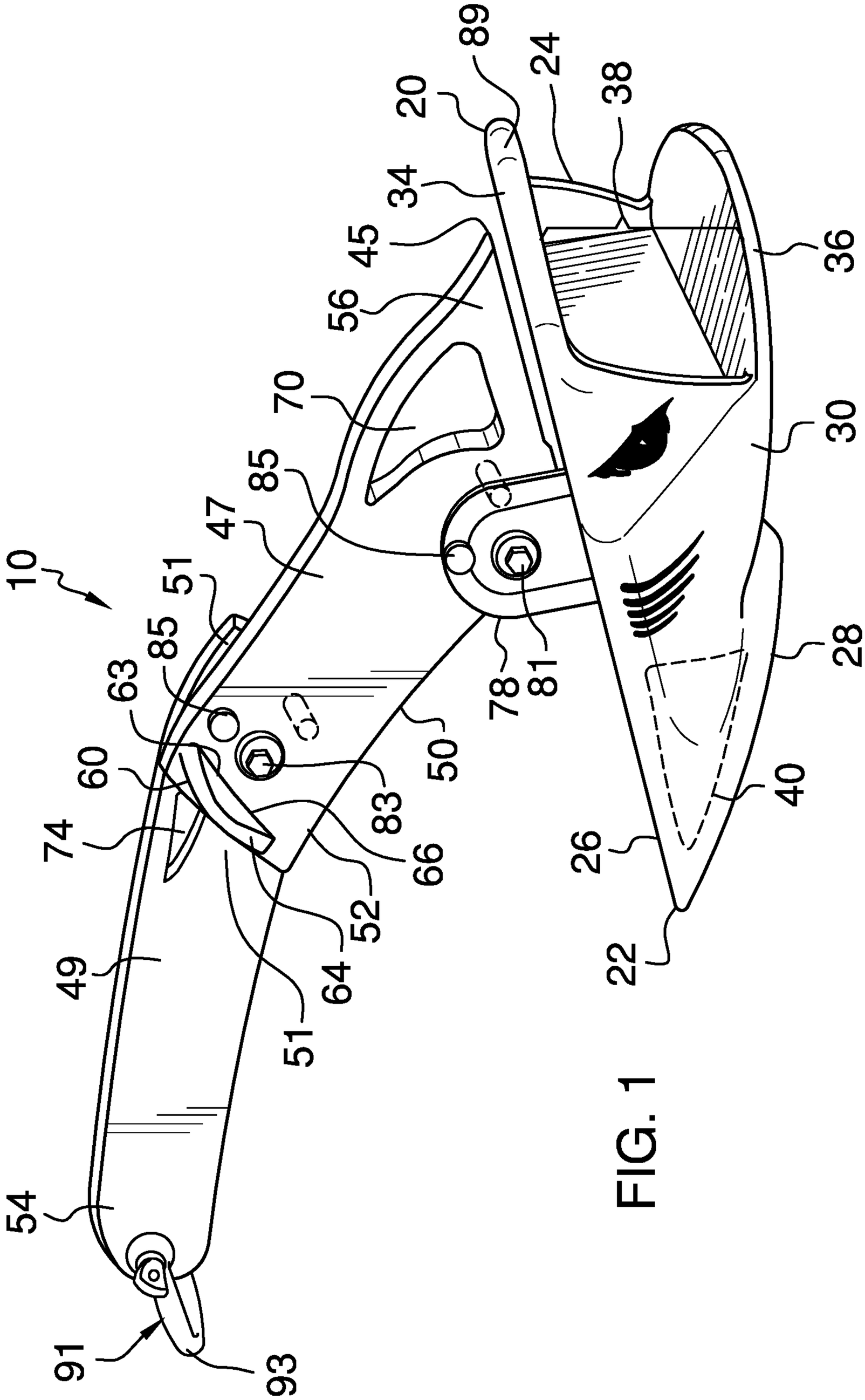

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FIG. 1

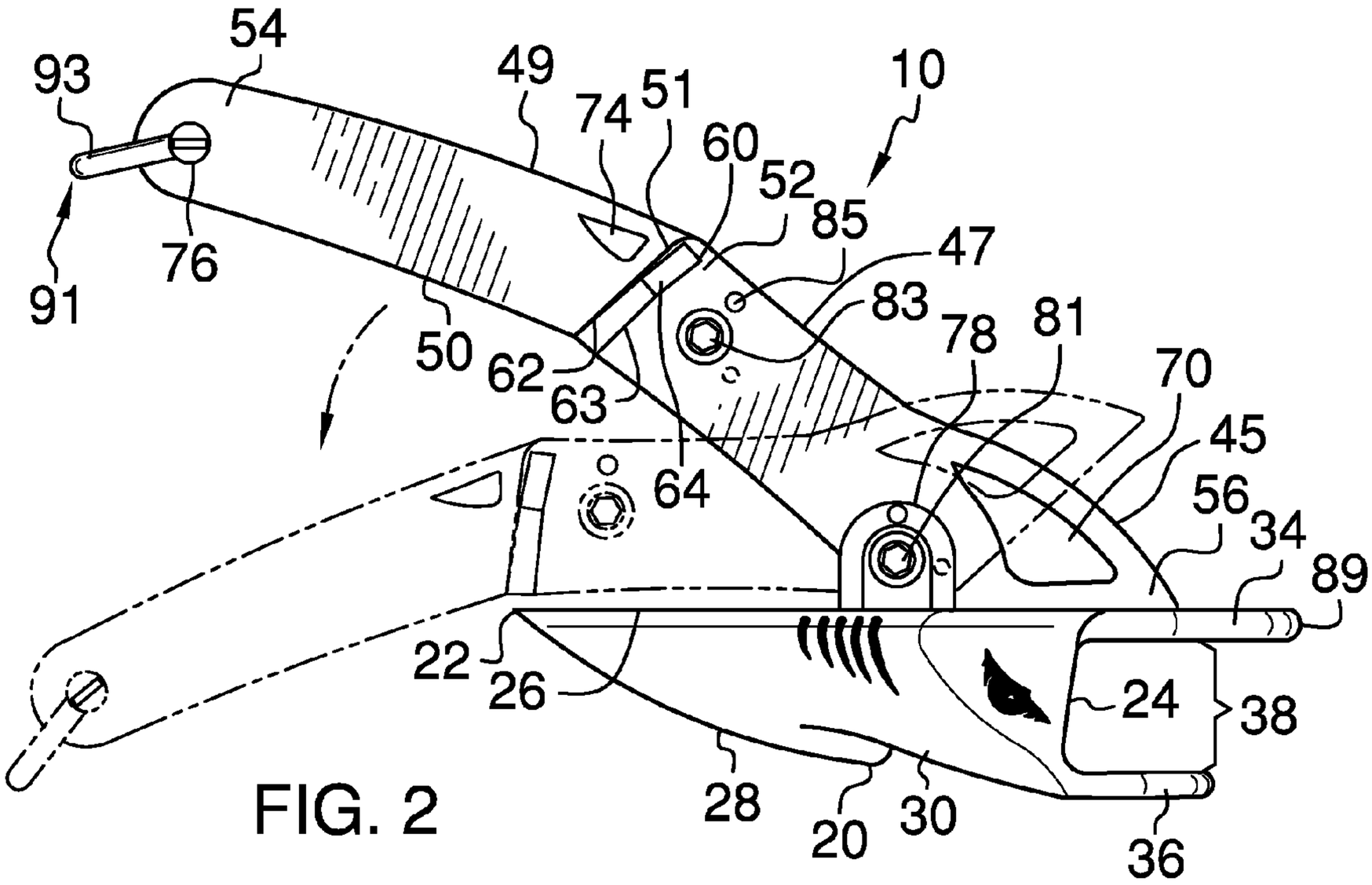
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FIG. 2

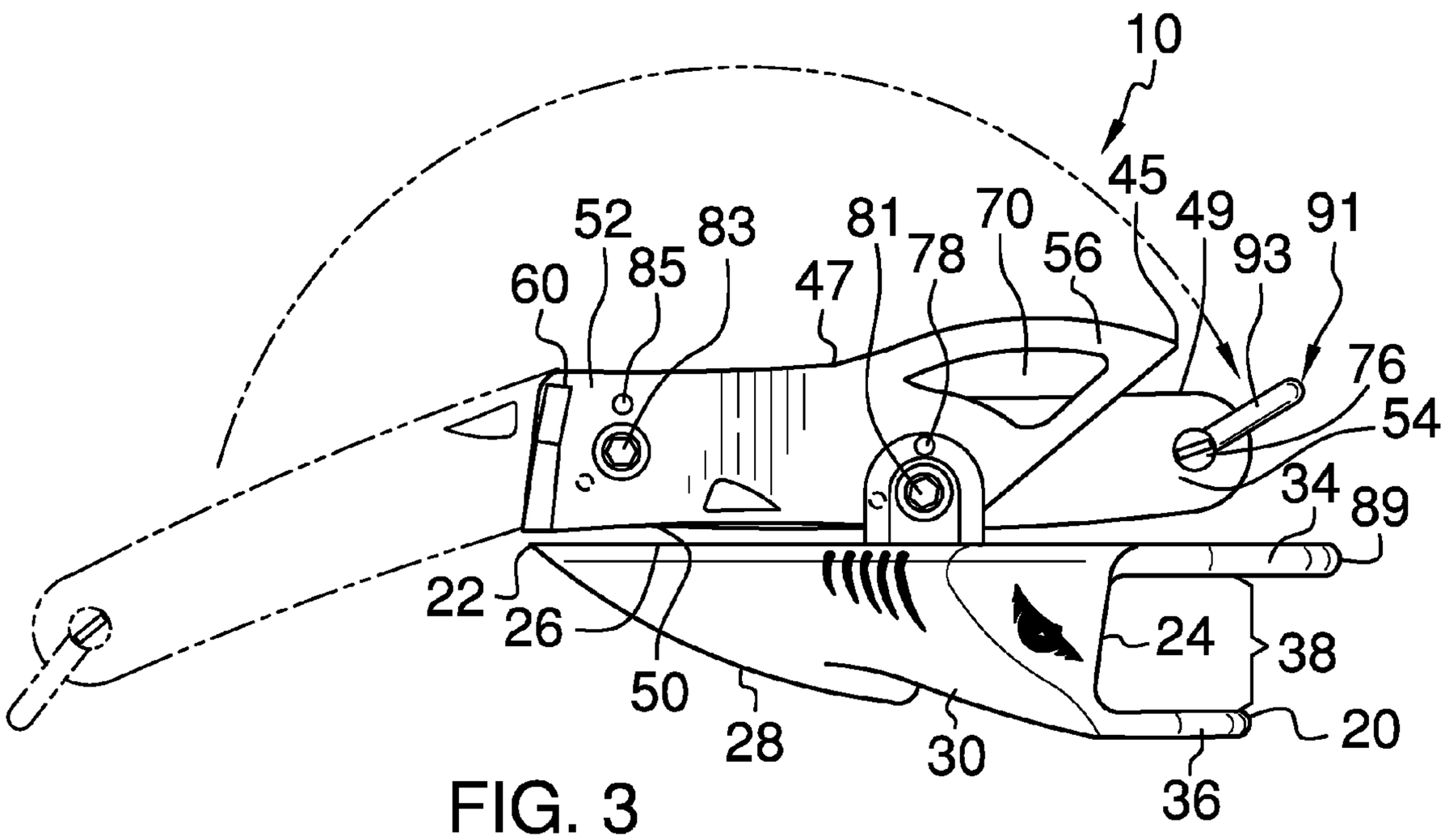
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FIG. 3

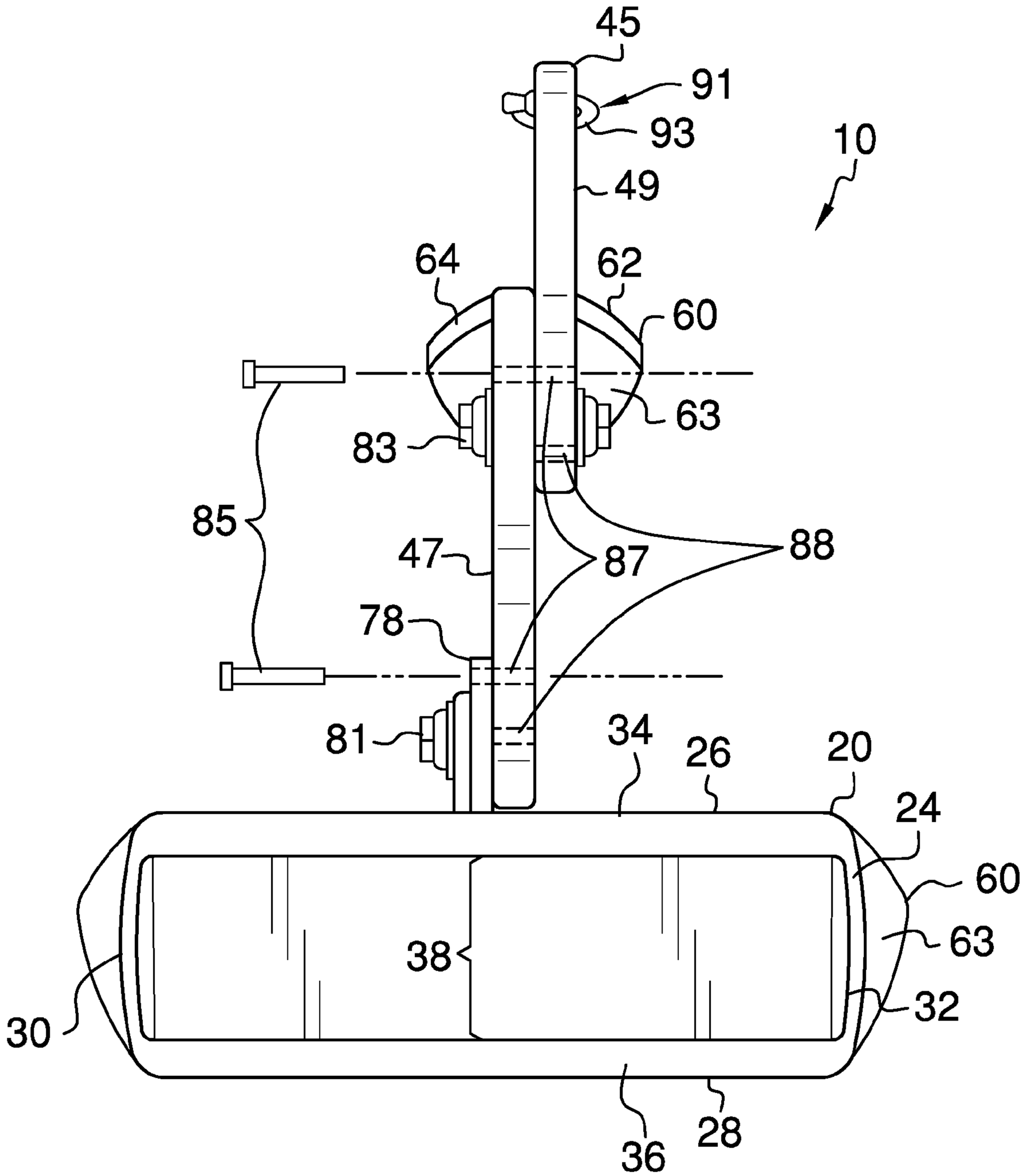
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FIG. 4

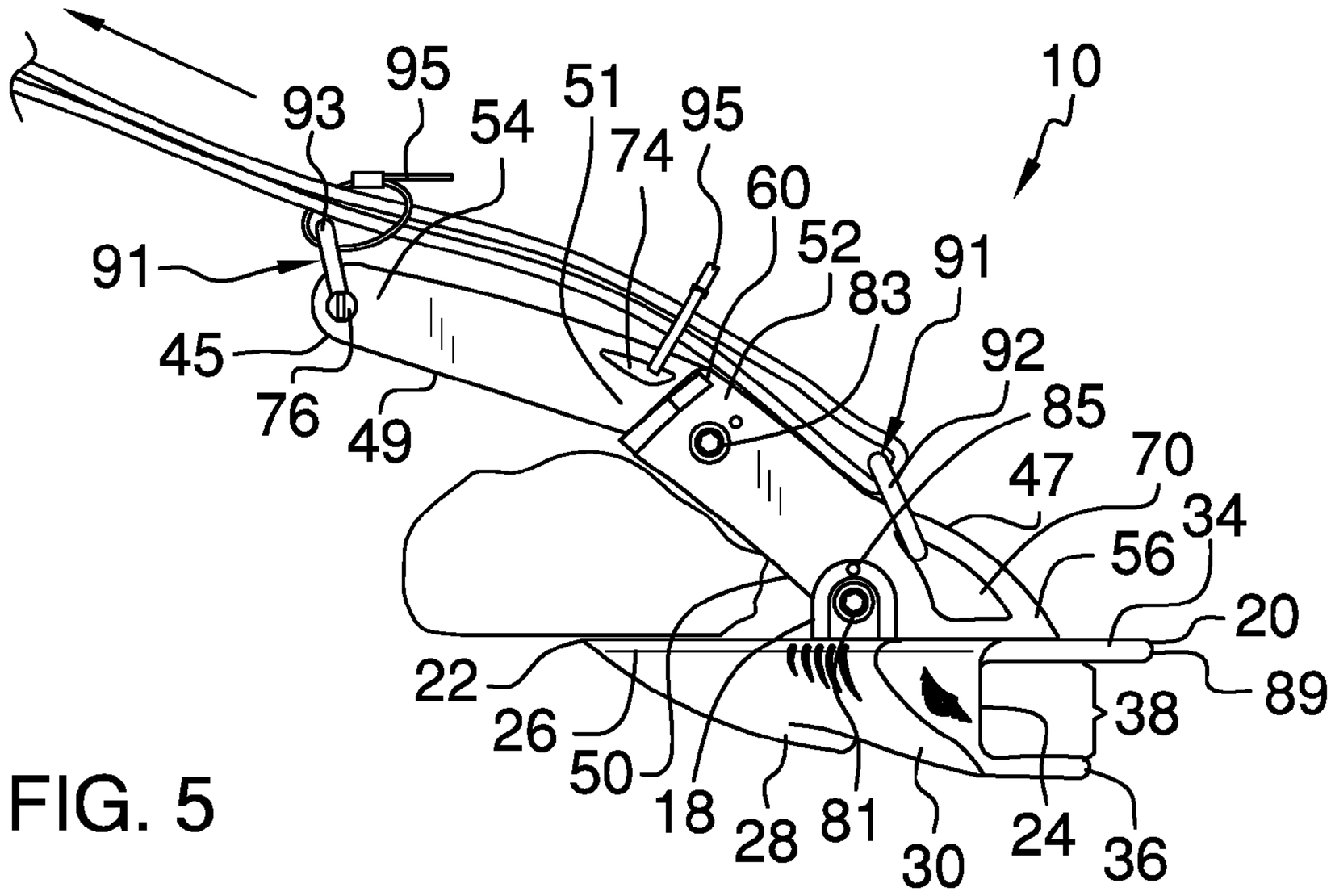
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FIG. 5

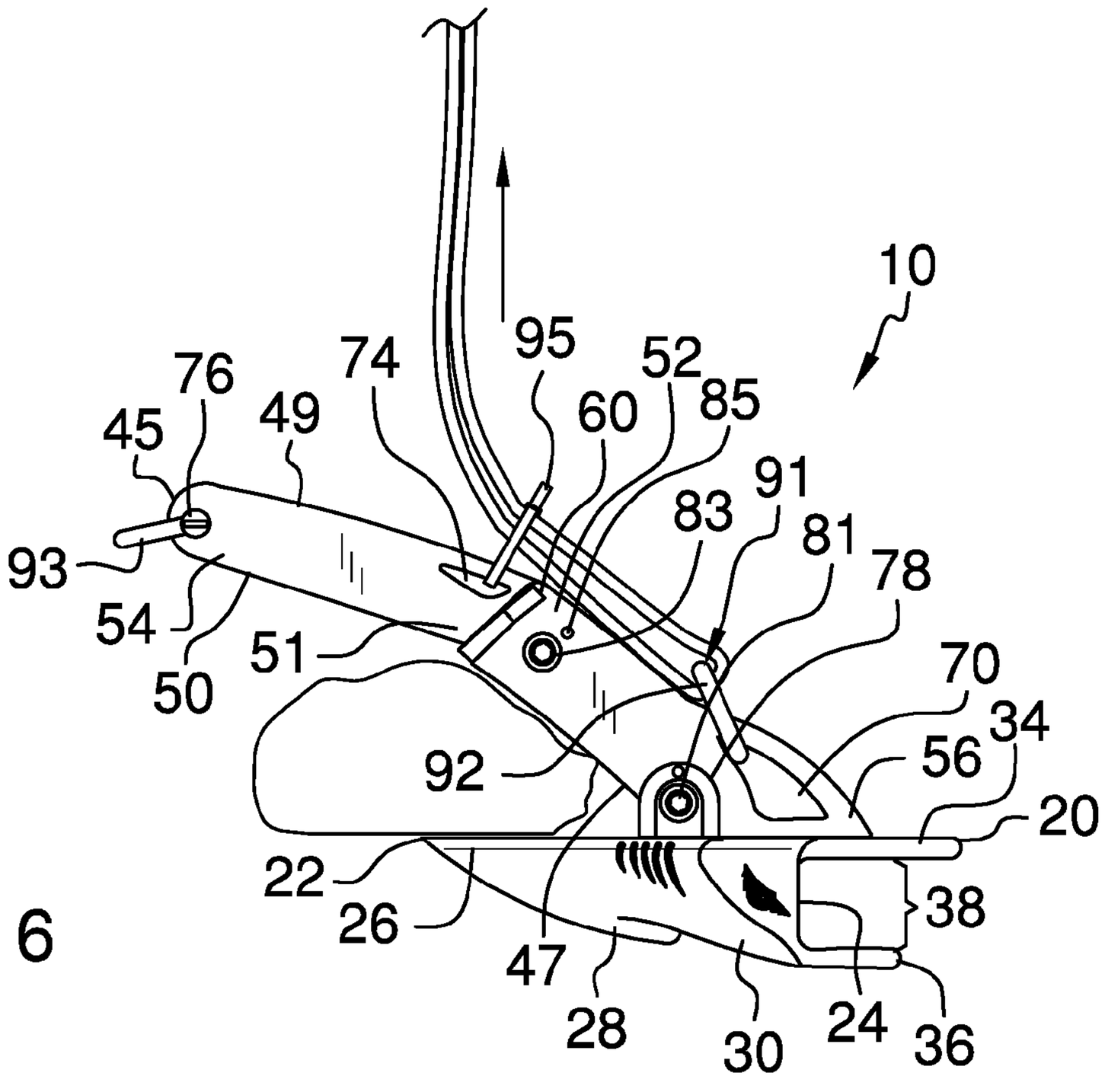
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FIG. 6

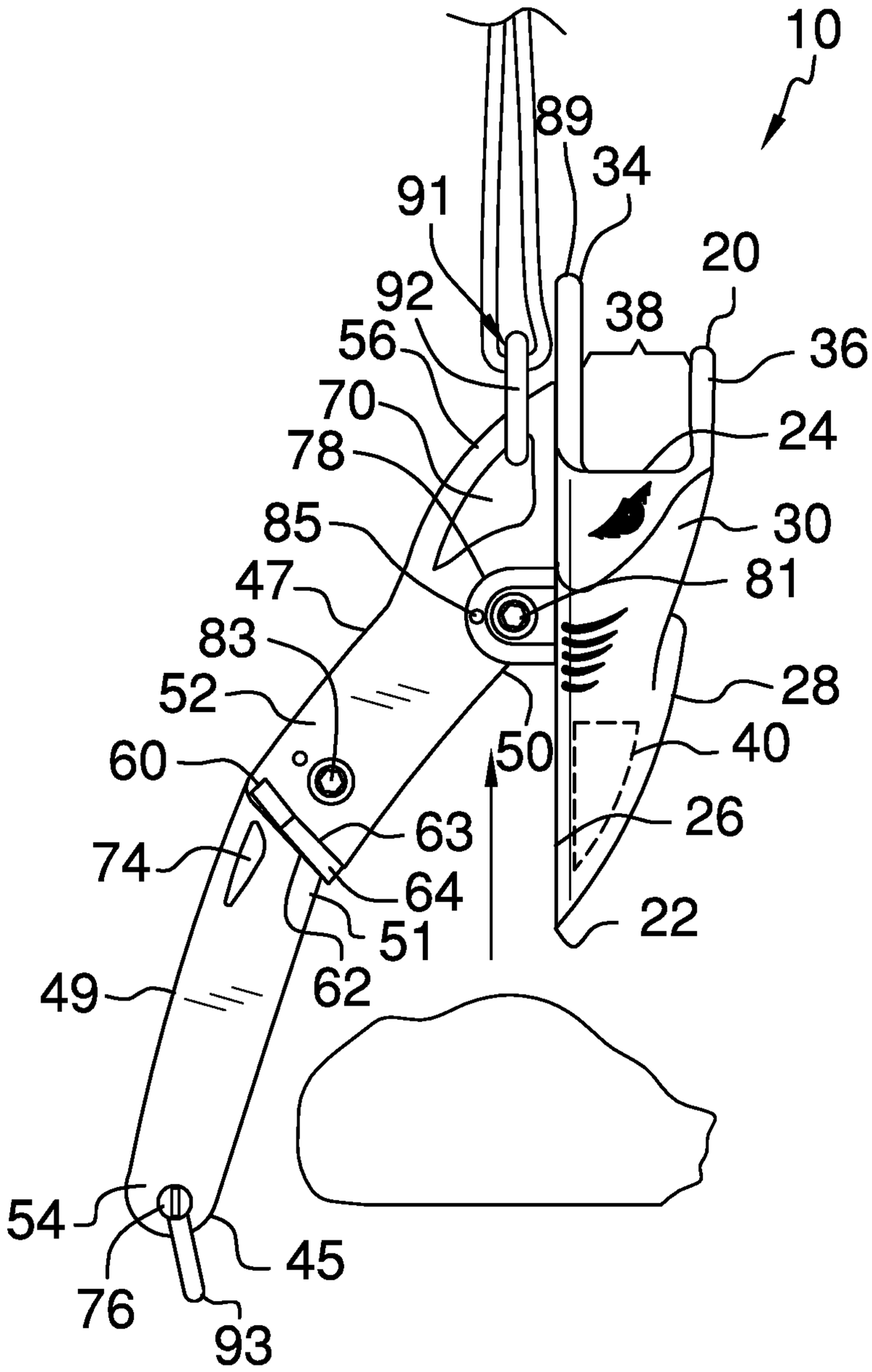
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FIG. 7

FOLDABLE ANCHOR

BACKGROUND OF THE INVENTION

Various types of watercraft anchoring devices are known in the prior art. However, very few watercraft anchoring devices work well in sandy and soft bottoms for smaller watercraft, such as kayaks, canoes, rowboats, stand up paddle boards, jet skis, and dinghies. In addition, existing watercraft anchoring devices for smaller watercraft that hold well in sandy bottoms are too large, too bulky, and too heavy for practical use and storage on the smaller watercraft and many of these devices also damage the smaller watercraft while the watercraft is in motion and bouncing in the water. Motorized watercraft typically store anchors onboard in either a storage bin or out in the open on the deck, while the smaller motorized watercraft have limited or no storage space for an anchor. Non-motorized watercraft, such as a kayaks or a stand up paddle boards, typically lack any storage space. Backpacks commonly used by the operators of non-motorized watercraft are too small for storing an anchor and, as a result, an anchor and the accessory anchor rope has to be carried along with other gear. At present, anchors commonly sold with non-motorized watercraft fail to stay positioned, which leads to frustration due to the constant need to reposition the watercraft or alternately tie up to other more stable watercraft or other immovable objects or, even further, tie the anchor ropes around the operator's hands thereby limiting the operator's ability to freely move in the water. In addition, existing anchors often require the non-motorized watercraft operators to go under water to set the anchor, particularly in rough water or in an area with a strong current. What is needed, and what the present foldable anchor provides, is a compact anchor which securely holds watercraft in place in sandy and soft bottom boating areas and which is also releasable from underwater objects, such as coral or rock, without damaging the environment.

FIELD OF THE INVENTION

The present invention relates to watercraft anchoring devices, and more particularly, to a foldable anchor.

SUMMARY OF THE INVENTION

The general purpose of the present foldable anchor, described subsequently in greater detail, is to provide a foldable anchor which has many novel features that result in a foldable anchor which is not anticipated, rendered obvious, suggested, or even implied by prior art, either alone or in combination thereof.

To accomplish this, the present foldable anchor is a compact anchor which securely holds watercraft in place in sandy and soft bottom boating areas and which is also releasable from underwater objects, such as coral or rock, without damaging the environment. The anchor body and shank are designed specifically to hold in sand and soft bottoms. However, the foldable anchor can be used in other bottom environments, as well. The present foldable anchor includes a first hinge connector connecting the anchor body to the shank so that the shank can pivot relative the anchor body to reduce the overall size of the anchor. In addition, the present foldable anchor includes a two-part shank having a second hinge connector which allows the shank to fold in half to further reduce the overall size of the anchor. The anchor rope can be attached to primary and secondary

locations on the shank, depending on the nature of the bottom where anchor body is to hold. This structure allows the user to release the anchor body in the event the anchor body is caught on coral or another underwater object on the bottom. For coral reef areas, the shank structure helps to minimize damage to precious coral and also minimizes the need to cut the anchor line and leave the anchor body on the bottom when the anchor body catches on coral or another underwater object. Some regulations may require the ability to retrieve stuck anchors without damaging corals or sensitive bottom areas.

The foldable anchor allows the anchor body to land in a correct upright position in the sand every time because the shank has a pair of stabilizer wings, which extend perpendicularly from the shank in a position proximal the second hinged connector, to assist the anchor body to roll over into the correct upright position when the anchor lands on its side, such as on one of the left end or the right end thereof, via the combination of the stabilizer wings and a strategically-placed ballast within a leading edge of the anchor body which allows the anchor body to naturally land on the bottom end of the anchor body. A locking pin proximal each of the first hinge connector and the second hinge connector is provided to secure the respective first and second hinge connector into place to lock the rear portion of the shank into a selected position relative the anchor body top end and the front portion of the shank into a selected position relative the second portion of the shank.

The present foldable anchor is formed of plastic and/or rustproof metal materials which will not damage the watercraft, such as the storage compartments, while in motion and bouncing in the water. When the foldable anchor is manufactured in metal, the metal is coated in plastic or rubberized materials to cushion the metal in order to prevent damage to the watercraft. The present foldable anchor is provided in a wide range of sizes to anchor a wide range of watercraft. Thus has been broadly outlined the more important features of the present foldable anchor so that the detailed description thereof that follows may be better understood and in order that the present contribution to the art may be better appreciated.

BRIEF DESCRIPTION OF THE DRAWINGS

Figures

FIG. **1** is an isometric view showing a two-part shank in an extended position.

FIG. **2** is a side elevation view illustrating the pivotability of the shank relative an anchor body.

FIG. **3** is a side elevation view illustrating the foldability of the shank.

FIG. **4** is a rear elevation view.

FIG. **5** is a side elevation view showing a rearward D-ring engaging an opening disposed through a back end of a rear portion of the shank and an end loop of an anchor rope and a forward D-ring engaging a hole disposed through a distal end of a front portion of the shank, and also showing a zip tie engaging each of the forward D-ring and the anchor rope and the aperture and the anchor rope, and further showing a top end of the anchor body being relatively perpendicular to the end loop and an underwater object lodged between the anchor body and the shank.

FIG. **6** is a side elevation view showing the disengagement of the forward D-ring and associated zip tie with the anchor rope, the engagement of the rearward D-ring with the end loop, the engagement of the zip tie with the aperture and

the anchor rope and also showing the top end of the anchor body being relatively perpendicular to the end loop and the underwater object lodged between the anchor body and the shank.

FIG. **7** is a side elevation view showing the disengagement of the forward D-ring and associated zip tie with the anchor rope, the disengagement of the zip tie with the aperture and the anchor rope and the continued engagement of the rearward D-ring with the end loop and further showing the top end of the anchor body being relatively parallel to the end loop and the leading edge of the anchor body being below the rear end and even further showing the dislodgement of the underwater object from a position between the anchor body and the shank.

DETAILED DESCRIPTION OF THE DRAWINGS

With reference now to the drawings, and in particular FIGS. **1** through **7** thereof, an example of the instant foldable anchor employing the principles and concepts of the present foldable anchor and generally designated by the reference number **10** will be described.

Referring to FIGS. **1** through **7** the present foldable anchor **10** is illustrated. The foldable anchor **10** includes a substantially wedge-shaped anchor body **20**. The anchor body **20** has a leading end **22**, a rear end **24**, a top end **26**, a bottom end **28**, a right end **30**, and a left end **32**. An upper extension **34** of the anchor body **20** extends from the rear end **24** in a position coplanar with the top end **26**. A lower extension **36** of the anchor body **20** extends from the rear end **24** in a position coplanar with the bottom end **28**. The upper extension **34** has a length greater than a length of the lower extension **36**. The rear end **24** has a height and a width greater than a height and a width, respectively, of the leading end **22**. An open cavity **38** is centrally disposed between the upper extension **34** and the lower extension **36**. A weighted ballast **40** is disposed within the anchor body **20** at the leading end **22**. The weighted ballast **40** allows the anchor body **20** to naturally land on the bottom end **28** of the anchor body **20**.

A two-part shank **45** is pivotably attached to the top end **26** of the anchor body **20**. The shank **45** has a substantially parallelepiped rear portion **47**, a substantially paralllelpiped front portion **49**, and an underside **50**. The rear portion **47** is pivotably attached to the top end **26** of the anchor body **20**. The front portion **49** has a proximal end **51** pivotably attached to a front end **52** of the rear portion **47**. The front portion **49** also has a distal end **54** which is pivotable from an extended position extended away from the front end **52** of the rear portion **47** to a folded position. The rear portion **47** also has a back end **56**. The distal end **54** of the front portion **49** is parallel to and directly adjacent the back end **56** of the rear portion **47** when the front portion **49** is in the folded position. In the folded position, the length of the device **10** is reduced for carrying and transporting the device **10** on watercraft having limited storage space and limited deck space.

A stabilizer wing **60** is disposed on each of the front end **52** of the rear portion **47** of the shank **45** in a position perpendicular to the rear portion **47** and the proximal end **51** of the front portion **49**. Each stabilizer wing **60** has a flat triangle front wall **62**, a flat triangle rear wall **63**, an external wall **64**, and an internal wall **66** disposed on the respective front end **52** and proximal end **51**. The stabilizer wings **60** assist the anchor body **20** to roll over into a correct upright position when the anchor body **20** lands on one of the left end **32** or the right end **30** thereof.

An opening **70** is disposed through the back end **56** of the rear portion **47** of the shank **45**. An aperture **74** is disposed through the proximal end **51** of the front portion **49**. A hole **76** is disposed through the distal end **54** of the front portion **49**.

The pivotability of the shank **45** relative the anchor body **20** is accomplished with the provision of an attachment body **78** disposed between a central point of the top end **26** of the anchor body **20** and the back end **56** of the rear portion **47** of the shank **45** proximal the opening **70** in a position between the opening **70** and the underside **50** of the shank **45**. A first hinge connector **81** is disposed through the attachment body **78** and the back end **56** of the rear portion **47** of the shank **45**. A second hinge connector **83** is disposed through the front end **52** of the shank **45** rear portion **47** and the proximal end **51** of the shank **45** front portion **49**. The second hinge connector **83** permits the front portion **49** to pivot relative the rear portion **47** of the shank **45**.

The shank **45** is pivotable with respect to the top end **26** of the anchor body **20** from an elevated position to a lowered position. The back end **56** of the shank **45** rear portion **47** is directly adjacent the top end **26** and the distal end **54** of the shank **45** front portion **49** is in a position at an angle approximately 225 degrees relative to the top end **26** when the shank is in the elevated position. The underside **50** of the shank **45** rear portion **47** is parallel and proximal to the top end **26** and the underside **50** of the shank **45** front portion **49** is at angle of approximately 135 degrees relative the top end **26** when the shank **45** is in the lowered position.

A pair of locking pins **85** engages a set of first guide channels **87** when the anchor is engaged and a set of second guide channels **88** when the rear end and the front end are in a folded position. One of the pair of locking pins **85** engages either the first guide channel **87**, or the second guide channel **88** when the anchor is folded, through the respective attachment body **78** and shank **45** rear portion **47** proximal the first hinge connector **81** and the opening **70** to lock the rear portion **47** of the shank **45** into a selected position relative the anchor body **20** top end **26** while the other one of the pair of locking pins **85** engages either the first guide channel **87** or the second guided channel **88** and the shank **45** rear portion **47** and shank **45** front portion **49** proximal the second hinge connector **83** and the stabilizer wings **60**. The locking pins **85** secure the respective first and second hinge connector **81**, **83** into place and the front portion **49** of the shank **45** into a selected position relative the second portion **47** of the shank **45**, respectively.

Each of the upper extension **34** and the lower extension **36** has a rounded outer end **89** to prevent the upper and lower extension **34**, **36** from snagging onto an underwater object, such as coral, on the bottom of the body of water.

A pair of D-rings **91** is provided to secure the device **10** to an anchor rope. The pair of D-rings **91** includes a rearward D-ring **92** and a forward D-ring **93**. The rearward D-ring **92** is engageable to each of the opening **70** and an end loop of an anchor rope. The forward D-ring **93** is engageable to the hole **76** disposed through the distal end **54** of the front portion **49**. A pair of zip ties **95** is also provided. One of the pair of zip ties **95** is engageable to a respective one of the forward D-ring **93** and the anchor rope and the aperture **74** disposed through the proximal end **51** of the front portion **49** and the anchor rope. As used herein, the term "zip tie" is defined as a nylon or plastic fastener for holding items together and having a flexible tape section with a plurality of teeth that engage with a pawl in the head to form a ratchet so that as the free end of the tape section is pulled, the zip tie tightens and is secured. In use, if the anchor body **20** is

caught on an underwater object, such as coral, on the bottom of the body of water, the user positions the watercraft to which the device **10** is attached directly atop the anchor body **20** and yanks and pulls the anchor rope vertically and upwardly toward the user until the pair of zip ties **95** break from the D-Ring **93** and from the aperture **74** on the shank **45**. Once the anchor rope is free from the zip ties **95**, the user continues to pull the anchor rope attached to D ring **92** and the anchor body **20** therewith vertically toward the user to release the anchor body **20** from the underwater object.

What is claimed is:

1. A foldable anchor comprising:

a substantially wedge-shaped anchor body having a leading end, a rear end, a top end, a bottom end, a right end, a left end, an upper extension extending from the rear end in a position coplanar with the top end, and a lower extension extending from the rear end in a position coplanar with the bottom end, the rear end having a height and a width greater than a height and a width, respectively, of the leading end;

an open cavity centrally disposed between the upper extension and the lower extension;

a weighted ballast disposed within the anchor body at the leading end;

a two-part shank pivotably attached to the top end of the anchor body, the shank having a substantially parallelepiped rear portion, a substantially paralllelpiped front portion, and an underside, the rear portion being pivotably attached to the top end of the anchor body, the front portion having a proximal end pivotably attached to a front end of the rear portion, the front portion further having a distal end being pivotable from an extended position extended away from the front end of the rear portion to a folded position, the rear portion further having a back end, wherein the distal end of the front portion is parallel to and directly adjacent the back end of the rear portion when the front portion is in the folded position;

a stabilizer wing disposed on each of the front end of the rear portion of the shank in a position perpendicular to the rear portion and the proximal end of the front portion, each stabilizer wing having a flat triangle front wall, a flat triangle rear wall, an external wall, and an internal wall disposed on the respective front end and proximal end;

an opening disposed through the back end of the rear portion of the shank;

an aperture disposed through the proximal end of the front portion; and

a hole disposed through the distal end of the front portion;

wherein the shank is pivotable with respect to the top end of the anchor body from an elevated position to a lowered position, wherein the back end of the shank rear portion is directly adjacent the top end and the distal end of the shank front portion is in a position at an angle approximately 225 degrees relative to the top end when the shank is in the elevated position, wherein the underside of the shank rear portion is parallel and proximal to the top end and the underside of the shank front portion is at angle of approximately 135 degrees relative the top end when the shank is in the lowered position.

2. The foldable anchor of claim **1** comprising:

an attachment body disposed between a central point of the top end of the anchor body and the back end of the rear portion of the shank proximal the opening in a position between the opening and the underside of the shank;

a first hinge connector disposed through the attachment body and the back end of the rear portion of the shank; and

a second hinge connector disposed through the front end of the shank rear portion and the proximal end of the shank front portion.

3. The foldable anchor of claim **1** comprising:

a pair of locking pins, one of the pair of locking pins disposed proximal one of the respective first hinge connector and the second hinge connector, each of the pair of locking pins engaging a first guide channel through the respective attachment body and shank rear portion proximal the opening and the shank rear portion and shank front portion proximal the pair of stabilizer wings; and

the pair of locking pins, one of the pair of locking pins alternatively disposed proximal one of the respective first hinge connector and the second hinge connector, each of the pair of locking pins, alternatively engaging a second guide channel through the respective attachment body and shank rear portion proximal the opening and the shank rear portion and shank front portion proximal the pair of stabilizer wings.

4. The foldable anchor of claim **1** wherein the upper extension has a length greater than a length of the lower extension.

5. The foldable anchor of claim **1** comprising a rounded outer end on each of the upper extension and the lower extension.

6. The foldable anchor of claim **1** comprising:

a pair of D-rings, the pair of D-rings comprising a rearward D-ring engageable to each of the opening and an end loop of an anchor rope and a forward D-ring engageable to the hole disposed through the distal end of the front portion;

a pair of zip ties, one of the pair of zip ties engageable to a respective one of the forward D-ring and the anchor rope and the aperture disposed through the proximal end of the front portion and the anchor rope.

* * * * *